



PCT09

See page 6.

## RAW SEQUENCE LISTING

DATE: 05/05/2003

PATENT APPLICATION: US/09/857,524B

TIME: 09:08:59

Input Set : A:\BB1264Seq list.txt

Output Set: N:\CRF4\05022003\I857524B.raw

ENTERED

```

3 <110> APPLICANT: Edgar B. Cahoon
4   Rebecca E. Cahoon
5   William D. Hitz
6   Anthony J. Kinney
8 <120> TITLE OF INVENTION: Membrane-Bound Desaturases
10 <130> FILE REFERENCE: BB1264
12 <140> CURRENT APPLICATION NUMBER: US/09/857,524B
13 <141> CURRENT FILING DATE: 2001-06-04
15 <150> PRIOR APPLICATION NUMBER: 60/110,784
16 <151> PRIOR FILING DATE: 1998-12-03
18 <160> NUMBER OF SEQ ID NOS: 17
20 <170> SOFTWARE: Microsoft Office 97
22 <210> SEQ ID NO: 1
23 <211> LENGTH: 1471
24 <212> TYPE: DNA
25 <213> ORGANISM: Picramnia pentandra
27 <220> FEATURE:
28 <221> NAME/KEY: unsure
29 <222> LOCATION: (1402)
30 <223> OTHER INFORMATION: n = A, C, G, or T
32 <400> SEQUENCE: 1
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34 agaagcacat ttcgcaagca gaccttgcaa agcataagca accaggagat ttatggatct 120
35 ctatcaaggg aaaagttht gatatctcca agtggaactaa agagcatccc ggtgggtgagc 180
36 tcccattggtt aagthtttgcc ggccaagatg tcaactgatgc gttcattgct taccatcctg 240
37 gcaactgcttg gcaatacctt gacaggthtct ttactgggta ctacgttcaa gattactctg 300
38 tctctgagat gtccaaggac tacagaaggc tctctctga gttttctaag atgggthtgt 360
39 tcaagacacc aggcaaagggt gtctactgct caatctthtt cgtgtctgtg ttgttcgctc 420
40 tgagtgttht cgggtgttctc tactgcaaga gcacctgggc tcatctttgc tctggthtgc 480
41 taatgggtat gctatggctc cagagtgggtt ggggtgggca tgattcttgt cactaccaag 540
42 ttatgcctaa ccgtaagctt aatcgctctt ttcaaatcat tgcaggaaat gtgattgctg 600
43 gtgttagtgt tgcatgggtg aagttggacc ataacacca tcactttgcc tgtaatagcg 660
44 ccaatctgga tcctgatatt cagcaccttc ctataattgc catatcccca aaatthttca 720
45 actcccttac atcatactat cacaactgca aatgacctt tgatcgcgct gccaggthtt 780
46 ttgttagctt tcagcactgg acatthttatc ctgcattggt aagcgthtag ctctatcttt 840
47 ttattctgtc thtttaagggt gtgtthttcca acaacaaaag ggtatacaag agaagtcagg 900
48 aaatthtagg ctatgcagct thcttgactt ggtattctct actcctthtt cgcctacca 960
49 attggcctga aagggtcatg tathttcacgt cctgtthtag agtcgcccgg thccaacatt 1020
50 ggcagttcag cttgaatcac thtgctthta atgtthtac tggthtgcct agcggtaatg 1080
51 attggtthca ccagcagaca aagggcacgc tcaacataac agctthtctg tgggtgggatt 1140
52 ggtthtcatg tggcctgcac thtcagattg agcatcatct gthttccaag atgcctaagt 1200
53 gccatthcag gaaaatctca cccattgtga acaactthtg ccagaagcat aatthtgcct 1260
54 atgaaactgc taccatgtgg gaggccaata aatgggtata ctccacctg cgtgctgtgg 1320

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```

55 ctatggaagc taaggatgtt accaagccag ttcccaagaa catggtctgg gaagcaatga 1380
W--> 56 acacttttcgg gtgaacctta tnaaacatca agtgctgtct ttcccgtaaa agcttccagt 1440
57 cccaatgttt cttttttttt tttttttttt t 1471
59 <210> SEQ ID NO: 2
60 <211> LENGTH: 448
61 <212> TYPE: PRT
62 <213> ORGANISM: Picramnia pentandra
64 <400> SEQUENCE: 2
65 Met Glu Glu Pro Lys Lys His Ile Ser Gln Ala Asp Leu Ala Lys His
66 1 5 10 15
68 Lys Gln Pro Gly Asp Leu Trp Ile Ser Ile Lys Gly Lys Val Tyr Asp
69 20 25 30
71 Ile Ser Lys Trp Thr Lys Glu His Pro Gly Gly Glu Leu Pro Leu Leu
72 35 40 45
74 Ser Phe Ala Gly Gln Asp Val Thr Asp Ala Phe Ile Ala Tyr His Pro
75 50 55 60
77 Gly Thr Ala Trp Gln Tyr Leu Asp Arg Phe Phe Thr Gly Tyr Tyr Val
78 65 70 75 80
80 Gln Asp Tyr Ser Val Ser Glu Met Ser Lys Asp Tyr Arg Arg Leu Val
81 85 90 95
83 Ser Glu Phe Ser Lys Met Gly Leu Phe Lys Thr Pro Gly Lys Gly Val
84 100 105 110
86 Tyr Cys Ser Ile Phe Phe Val Ser Val Leu Phe Ala Leu Ser Val Tyr
87 115 120 125
89 Gly Val Leu Tyr Cys Lys Ser Thr Trp Ala His Leu Cys Ser Gly Leu
90 130 135 140
92 Leu Met Gly Met Leu Trp Leu Gln Ser Gly Trp Val Gly His Asp Ser
93 145 150 155 160
95 Cys His Tyr Gln Val Met Pro Asn Arg Lys Leu Asn Arg Leu Phe Gln
96 165 170 175
98 Ile Ile Ala Gly Asn Val Ile Ala Gly Val Ser Val Ala Trp Trp Lys
99 180 185 190
101 Leu Asp His Asn Thr His His Phe Ala Cys Asn Ser Ala Asn Leu Asp
102 195 200 205
104 Pro Asp Ile Gln His Leu Pro Ile Ile Ala Ile Ser Pro Lys Phe Phe
105 210 215 220
107 Asn Ser Leu Thr Ser Tyr Tyr His Asn Cys Lys Met Thr Tyr Asp Arg
108 225 230 235 240
110 Ala Ala Arg Phe Phe Val Ser Phe Gln His Trp Thr Phe Tyr Pro Ala
111 245 250 255
113 Leu Leu Ser Val Arg Leu Tyr Leu Phe Ile Leu Ser Phe Lys Val Val
114 260 265 270
116 Phe Ser Asn Asn Lys Arg Val Tyr Lys Arg Ser Gln Glu Ile Leu Gly
117 275 280 285
119 Tyr Ala Ala Phe Leu Thr Trp Tyr Ser Leu Leu Leu Ser Arg Leu Pro
120 290 295 300
122 Asn Trp Pro Glu Arg Val Met Tyr Phe Thr Ser Cys Leu Ala Val Ala
123 305 310 315 320
125 Gly Phe Gln His Trp Gln Phe Ser Leu Asn His Phe Ala Ser Asn Val

```

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TIME: 09:08:59

Input Set : A:\BB1264Seq list.txt

Output Set: N:\CRF4\05022003\I857524B.raw

```

126          325          330          335
128 Tyr Thr Gly Leu Pro Ser Gly Asn Asp Trp Phe His Gln Gln Thr Lys
129          340          345          350
131 Gly Thr Leu Asn Ile Thr Ala Ser Ala Trp Trp Asp Trp Phe His Gly
132          355          360          365
134 Gly Leu His Phe Gln Ile Glu His His Leu Phe Pro Arg Met Pro Lys
135          370          375          380
137 Cys His Phe Arg Lys Ile Ser Pro Ile Val Asn Lys Leu Cys Gln Lys
138 385          390          395          400
140 His Asn Leu Ser Tyr Glu Thr Ala Thr Met Trp Glu Ala Asn Lys Met
141          405          410          415
143 Val Tyr Ser Thr Leu Arg Ala Val Ala Met Glu Ala Lys Asp Val Thr
144          420          425          430
146 Lys Pro Val Pro Lys Asn Met Val Trp Glu Ala Met Asn Thr Phe Gly
147          435          440          445
149 <210> SEQ ID NO: 3
150 <211> LENGTH: 1764
151 <212> TYPE: DNA
152 <213> ORGANISM: Zea mays
154 <400> SEQUENCE: 3
155 gcacgagctc cctctctctc cccaatcctc cccgcctccc cctaccaaatt cagcaccacc 60
156 caaggcgcat ccgagccacg gccgcgcaat gccgcctctt gtcgatgcaa tgccggcccc 120
157 cggcgacgcc gcggcgccg gcgacgtgcg catgatctcc tccaaggagc tccgcgtca 180
158 cgttccgcc gacgacctct ggatctccat ctccggcgac gtgtacgacg tcacgccttg 240
159 gctccccac caccgggcg gcgacctccc gcttctcacc ctggcggggc aggacgccac 300
160 cgacgccttc gccgcctacc accgcctc gcgcgcgcgc ctctccgcc gcttcttctg 360
161 tggcgcttc tctgactacg ccgtctcccc cgcgtccgcc gactaccgcc gcctcctcgc 420
162 gcagctatcc tccgcgggcc tcttcgaacg cgtcggcccc accccaagg tccagctcgt 480
163 cctgatggcc gtctcttctt acgcgcgct gtacctcgtc ctgcgatgcg ccagcgcttg 540
164 ggcgcacctc ctgcggggg gtctcattgg ctctgtctgg atccagtcgc gctggatggg 600
165 ccacgactcg ggccaccacc gcacaccg gcacccgggc ctgcaccgcg tcgtgcaggt 660
166 gctctccggg aactgcctca ccggcctcag catgcctggg tggaagtgt accacaacac 720
167 gcaccacatc gcctgcaaca gcctggacca tgaccgggac ctccagcaca tgccgctctt 780
168 tgccgtctcc cccaagctgt tcggcaacat atggtcctac ttctaccaac ggaccctggc 840
169 gttcgatgcc gcctcgaaat tcttcacag ctaccagcac tggaccttct acccggtaat 900
170 gtgcacgcc aggataaata ttctcgcgca gtccgccttg ttctgttctc cggagaagag 960
171 ggtgccgag cggttgcttg agatcgcggg ggtcgccaca ttctgggctt ggtaccggtt 1020
172 gctggtggct tccctgccga attggtggga gaggtcgcg tttgtgcttt tcagcttcac 1080
173 catctcgggg attcagcacg tccaattctg cctgaaccac ttctcgtccg acgtgtatgt 1140
174 cgggccaccc aagggaatg actggttga gaagcagacg gcaggcacgc tcgacatcct 1200
175 gtgctctcct tggatggatt ggttccacgg tggcctgcag ttccagattg agcaccatct 1260
176 gtttccccgc ctacctcgtt gccaccttcg caaggttgca ccggccgtcc gcgacctttg 1320
177 caagaagcat gggctcactt attctgcagc cacattctgg ggtgcaaagt tgcttacatg 1380
178 gaagacactc agggctgctg cattgcaggc caggaccgct acaagtggg gtgctccgaa 1440
179 gaatttggtg tgggaggctg tgaacacca tggataaatg ggatgaagat acgggctaata 1500
180 ggcaacttct ggtgttcagc ttggtgccc tgtgattgtc tggatgcctt tcagttattt 1560
181 agagatatgt atcattcaac ctgcctgagt cagggttgaa ttttcgtgtt gacaagtggc 1620
182 tgtctatcca gttggagagt tcatgcttca atagtctggt tgttcacggg atgttctgtt 1680
183 ctccctatca cggtaaactat atgatgatga tccttgcttt aattcatgaa cacttgtttc 1740

```

## RAW SEQUENCE LISTING

DATE: 05/05/2003

PATENT APPLICATION: US/09/857,524B

TIME: 09:08:59

Input Set : A:\BBI264Seq list.txt

Output Set: N:\CRF4\05022003\I857524B.raw

```

184 aagattaaaa aaaaaaaaaa aaaa                                1764
186 <210> SEQ ID NO: 4
187 <211> LENGTH: 462
188 <212> TYPE: PRT
189 <213> ORGANISM: Zea mays
191 <400> SEQUENCE: 4
192 Met Pro Pro Ser Val Asp Ala Met Pro Ala Pro Gly Asp Ala Ala Gly
193   1                               5                               10                               15
195 Ala Gly Asp Val Arg Met Ile Ser Ser Lys Glu Leu Arg Ala His Ala
196                               20                               25                               30
198 Ser Ala Asp Asp Leu Trp Ile Ser Ile Ser Gly Asp Val Tyr Asp Val
199                               35                               40                               45
201 Thr Pro Trp Leu Pro His His Pro Gly Gly Asp Leu Pro Leu Leu Thr
202                               50                               55                               60
204 Leu Ala Gly Gln Asp Ala Thr Asp Ala Phe Ala Ala Tyr His Pro Pro
205   65                               70                               75                               80
207 Ser Ala Arg Pro Leu Arg Arg Phe Phe Val Gly Arg Leu Ser Asp
208                               85                               90                               95
210 Tyr Ala Val Ser Pro Ala Ser Ala Asp Tyr Arg Arg Leu Leu Ala Gln
211                               100                              105                              110
213 Leu Ser Ser Ala Gly Leu Phe Glu Arg Val Gly Pro Thr Pro Lys Val
214                               115                              120                              125
216 Gln Leu Val Leu Met Ala Val Leu Phe Tyr Ala Ala Leu Tyr Leu Val
217                               130                              135                              140
219 Leu Ala Cys Ala Ser Ala Trp Ala His Leu Leu Ala Gly Gly Leu Ile
220  145                              150                              155                              160
222 Gly Phe Val Trp Ile Gln Ser Gly Trp Met Gly His Asp Ser Gly His
223                               165                              170                              175
225 His Arg Ile Thr Gly His Pro Val Leu Asp Arg Val Val Gln Val Leu
226                               180                              185                              190
228 Ser Gly Asn Cys Leu Thr Gly Leu Ser Ile Ala Trp Trp Lys Cys Asn
229                               195                              200                              205
231 His Asn Thr His His Ile Ala Cys Asn Ser Leu Asp His Asp Pro Asp
232   210                              215                              220
234 Leu Gln His Met Pro Leu Phe Ala Val Ser Pro Lys Leu Phe Gly Asn
235  225                              230                              235                              240
237 Ile Trp Ser Tyr Phe Tyr Gln Arg Thr Leu Ala Phe Asp Ala Ala Ser
238                               245                              250                              255
240 Lys Phe Phe Ile Ser Tyr Gln His Trp Thr Phe Tyr Pro Val Met Cys
241                               260                              265                              270
243 Ile Ala Arg Ile Asn Leu Leu Ala Gln Ser Ala Leu Phe Val Leu Thr
244                               275                              280                              285
246 Glu Lys Arg Val Pro Gln Arg Leu Leu Glu Ile Ala Gly Val Ala Thr
247   290                              295                              300
249 Phe Trp Ala Trp Tyr Pro Leu Leu Val Ala Ser Leu Pro Asn Trp Trp
250  305                              310                              315                              320
252 Glu Arg Val Ala Phe Val Leu Phe Ser Phe Thr Ile Cys Gly Ile Gln
253                               325                              330                              335
255 His Val Gln Phe Cys Leu Asn His Phe Ser Ser Asp Val Tyr Val Gly

```

## RAW SEQUENCE LISTING

DATE: 05/05/2003

PATENT APPLICATION: US/09/857,524B

TIME: 09:08:59

Input Set : A:\BB1264Seq list.txt

Output Set: N:\CRF4\05022003\I857524B.raw

```

256          340          345          350
258 Pro Pro Lys Gly Asn Asp Trp Phe Glu Lys Gln Thr Ala Gly Thr Leu
259          355          360          365
261 Asp Ile Leu Cys Ser Pro Trp Met Asp Trp Phe His Gly Gly Leu Gln
262          370          375          380
264 Phe Gln Ile Glu His His Leu Phe Pro Arg Leu Pro Arg Cys His Leu
265 385          390          395          400
267 Arg Lys Val Ala Pro Ala Val Arg Asp Leu Cys Lys Lys His Gly Leu
268          405          410          415
270 Thr Tyr Ser Ala Ala Thr Phe Trp Gly Ala Asn Val Leu Thr Trp Lys
271          420          425          430
273 Thr Leu Arg Ala Ala Ala Leu Gln Ala Arg Thr Ala Thr Ser Gly Gly
274          435          440          445
276 Ala Pro Lys Asn Leu Val Trp Glu Ala Val Asn Thr His Gly
277          450          455          460
279 <210> SEQ ID NO: 5
280 <211> LENGTH: 880
281 <212> TYPE: DNA
282 <213> ORGANISM: Glycine max
284 <220> FEATURE:
285 <221> NAME/KEY: unsure
286 <222> LOCATION: (496)
287 <223> OTHER INFORMATION: n = A, C, G, or T
289 <220> FEATURE:
290 <221> NAME/KEY: unsure
291 <222> LOCATION: (512)
292 <223> OTHER INFORMATION: n = A, C, G, or T
294 <220> FEATURE:
295 <221> NAME/KEY: unsure
296 <222> LOCATION: (523)
297 <223> OTHER INFORMATION: n = A, C, G, or T
299 <220> FEATURE:
300 <221> NAME/KEY: unsure
301 <222> LOCATION: (532)
302 <223> OTHER INFORMATION: n = A, C, G, or T
304 <220> FEATURE:
305 <221> NAME/KEY: unsure
306 <222> LOCATION: (630)
307 <223> OTHER INFORMATION: n = A, C, G, or T
309 <220> FEATURE:
310 <221> NAME/KEY: unsure
311 <222> LOCATION: (700)
312 <223> OTHER INFORMATION: n = A, C, G, or T
314 <220> FEATURE:
315 <221> NAME/KEY: unsure
316 <222> LOCATION: (730)
317 <223> OTHER INFORMATION: n = A, C, G, or T
319 <220> FEATURE:
320 <221> NAME/KEY: unsure

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RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/857,524B

DATE: 05/05/2003  
TIME: 09:09:00

Input Set : A:\BB1264Seq list.txt  
Output Set: N:\CRF4\05022003\I857524B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 1402

Seq#:5; N Pos. 496, 512, 523, 532, 630, 700, 730, 738, 761, 764, 814, 822, 824, 838, 842

Seq#:5; N Pos. 876

Seq#:6; Xaa Pos. 161, 166, 170, 173, 206, 252

Seq#:16; N Pos. 48, 538, 686, 704, 717, 727, 729, 737, 741, 750, 751, 769, 777, 807

**VERIFICATION SUMMARY**

DATE: 05/05/2003

PATENT APPLICATION: US/09/857,524B

TIME: 09:09:00

Input Set : A:\BB1264Seq list.txt

Output Set: N:\CRF4\05022003\I857524B.raw

L:56 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1380  
L:373 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:480  
M:341 Repeated in SeqNo=5  
L:447 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:160  
M:341 Repeated in SeqNo=6  
L:1106 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16 after pos.:0  
M:341 Repeated in SeqNo=16